UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,062	12/09/2003	Bruno De Man	133643-1/YOD GERD:0071	3735

			EXAMINER
7590	12/28/2004		SONG, HOON K

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ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-27* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-27* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *09 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1, 5-6 and 18-19 are objected to because of the following informalities:

In claim 1 on line 11, replace ";" with --.--.

In claims 5-6 and 18-19 on line 1, "a trace" should read --the trace--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by

Yamada et al. (US 6426988B2).

Regarding claims 1, 14 and 24-27, Yamada teaches a method, a processor or

computer readable medium for reducing artifacts in image data generated by a

computed tomography system, the artifacts being due to the presence of a high-density

object (M) in a subject of interest, comprising:

receiving measured sinogram data (f(P)) from the computed tomography system,

the sinogram data representative of a plurality of sinogram elements (column 8 line 13-

30, column 12 line 41-47);

reconstructing the measured sinogram data to generate initial reconstructed

image data (column 12 line 48-58);

generating corrected sinogram data using the measured sinogram data (column 17 line 14-20);

assigning a weight measure to each sinogram element in the corrected sinogram data, wherein the weight measure is derived based on the measured sinogram data (column 14 line 65 - column 15 line 18); and

iteratively reconstructing the corrected sinogram data to generate improved reconstructed image data based on the weight measure (column 18 line 1-16).

Regarding claims 2 and 15, Yamada teaches generating corrected sinogram data using the measured sinogram data comprises using a projection completion technique (column 17 line 13-30).

Regarding claims 3 and 16, Yamada teaches generating corrected sinogram data further comprises identifying a trace of the high density object in the measured sinogram data; and correcting the measured sinogram data in the trace of the high density object (column 13 line 1-18).

Regarding claims 4 and 17, Yamada teaches identifying a trace of the high density object comprises:

segmenting the high density object (M) from the initial reconstructed image data (figure 1, column 13 line 1-3);

reprojecting the segmented high density object from the initial reconstructed image data to generate reprojected sinogram data (F image in figure 1); and

identifying a trace (L) of the high-density object based on the reprojected sinogram data (column 13 line 21-28).

Regarding claims 5 and 18, Yamada teaches identifying the trace of the high-density object comprises comparing each sinogram element in the measured sinogram data to a pre-defined threshold value (column 13 line 32-37).

Regarding claims 6 and 19, Yamada teaches identifying the trace of the high-density object comprises assigning a reliability measure to each sinogram element in the measured sinogram data (column 13 line 1-3).

Regarding claims 7 and 20, Yamada teaches correcting the measured sinogram data is performed using an interpolation technique (column 16 line 24).

Regarding claims 8 and 21, Yamada teaches correcting the measured sinogram data is performed using techniques selected from the group consisting of consistent completion techniques, spline based completion techniques, iterative correction techniques and non iterative correction techniques (column 14 line 28).

Regarding claim 9, Yamada teaches the weight measure is derived based on the measured sinogram data (column 14 line 41).

Regarding claim 10, Yamada teaches the weight measure is derived based on a relative position of each sinogram element with respect to the trace of the high-density object (column 15 line 17).

Regarding claim 11, Yamada teaches the weight measure is derived based on simulated sinogram data (column 12 line 59).

Regarding claims 12 and 22, Yamada teaches the initial reconstructed image data is generated using a filtered back projection technique (column 10 line 59).

Regarding claims 13 and 23, Yamada teaches iteratively reconstructing the corrected sinogram data to generate improved reconstructed image data is performed using techniques selected from the group consisting of maximum likelihood (ML) techniques and maximum a posteriori (MAP) techniques (column 2 line 40).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fessler (US 6754298B2) teaches a method for statistically reconstructing images from a plurality of transmission measurements having energy diversity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is (571) 272-2494. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272 - 2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HKS

12/19/04

HKS

DAVID V. BRUCE
PRIMARY EXAMINER